2013 Real World Externships
Central Iowa Region

Externship Descriptions and Quotes

Brent Achenbach
Monsanto
Ankeny, IA

Brent's Externship gave him the opportunity to work within an MBT Strategy and Operations Team doing workflow analysis based on data from key performance indicators. The team utilized new analytical approaches for modeling long-range demand versus capability and also created data visualizations for internal presentations and decision making.

"I think it is great that businesses choose to do programs like this Externship. It makes them active participants in the educational process. Teachers get an opportunity to see first hand how skills that they teach are applied in the real world."
–Brent Achenbach
Math Teacher, Woodward Granger High School

Kim Awalt
HNI, HON Co.
Muscatine, IA

This summer, Kim analyzed data with the quality department to help discover patterns in customer quality issues. Using this information, she then met with Quality Managers in particular areas of production to work on solutions to minimize the number of customer issues. She also worked with the product development team on a specification project.

"I can't wait to share with my students just the aspect of teamwork that is needed, from the design team, quality team, to the shop floor in order to come up with initial ideas, solve problems and put things into action to get a good final product."

–Kim Awalt

Math Teacher, Louisa-Muscatine Junior High School

Julie Bahl
Mississippi River Museum & Aquarium
Dubuque, IA

For Julie's externship she worked in both the education department and the Living Collections Department. In the Education Department she compiled a Tour Guide Booklet with information on all of the animals in the museum, as well as the non-animal exhibits. In the Living Collections Department Julie helped with the care of the animals; feeding, cleaning animal areas, and preparing food for the next day.

"…students will realize that science, math, reading/writing, and social studies are NOT separate entities. In the classroom we emphasize one content area over another, but in real life you cannot separate them – they overlap and intersect and criss-cross each other. This blending of the different subjects gives the student a truer view of the real world, and as such will better prepare them for the work place."
–Julie Bahl
Science Teacher, Dubuque Roosevelt Middle School

Gabe Bakker
Vermeer
Pella, IA

Gabe worked as a part of the Continuous Improvement team evaluating the efficiency of different processes in the plant. He was involved in projects that assessed how to relocate several different assembly lines as they renovate different sections of the plant. Gabe used physical labor, problem-solving skills, communication skills, and Excel and other Vermeer software to analyze data to determine the most efficient methods.

"Technology is used everyday in my experience… all employees have to be trained and skilled with different computer programs to help make their jobs and processes better. These skills should be taught in every class in the high school. Whether it is appropriate use of school (work) computers or using industry software to design a part on a machine, the students need to be proficient in regards to technology."
–Gabe Bakker
Math Teacher, Pleasantville High School

Jenny Bell
Musco Lighting
Oskaloosa, IA

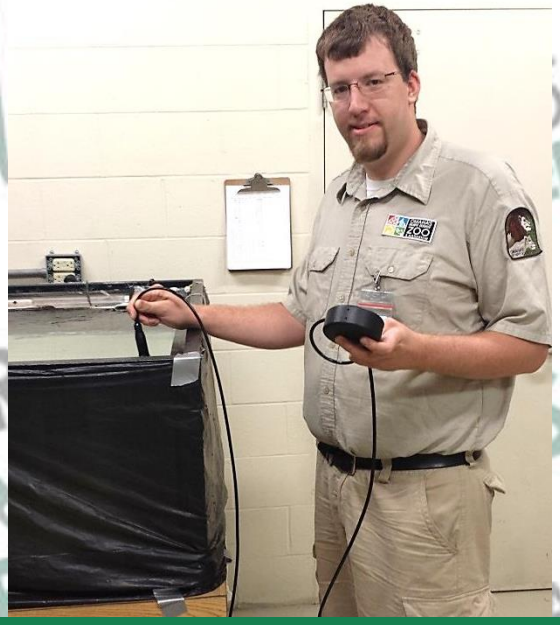
For her Externship, Jenny completed a light-energy audit for her school. After collecting data from the school, she provided Musco with a detailed report identifying energy savings, life cycle cost analysis, and other information. After this first audit, she looked into other facilities within her community that showed potential for energy saving through their lighting usage.

"I can't wait to share with my students all of the team work that has to happen in order to get to a finished product. Working in groups is one thing many students struggle with in sixth grade. I hope by sharing part of the process that I've seen here will help them realize how important working together."

–Jenny Bell

Math Teacher, Sigourney Middle School

Daniel Borowiak
Omaha's Henry Doorly Zoo
Omaha, NE



Over the summer Daniel worked in a variety of departments within the Henry Doorly Zoo. He experienced the work and responsibilities of keepers in the petting zoo, insect pavilion and the aquarium. Daniel also took part in the lab work that takes place from the aquarium to the zoo's nutrition lab.

"The zoo is abound with skills that are taught in a high school classroom. At the Interactive Animal Pavilion (IAP), skills ranged from knowledge of metric conversions to proper lab procedures. The most prevalent what knowledge of the scientific method; at any given time the staff of IAP would be running several experiments… that all involved skills like keeping methods consistent, accurate data collection and controlling variables."

–Daniel Borowiak

Science Teacher, Council Bluffs Thomas Jefferson High School

Brandon Brooks
John Deere Ottumwa Works
Ottumwa, IA

Brandon worked with Deere's Welding Engineers for their Round Baler line. He developed preventative maintenance plans for the robot cells and ventilation systems. He also assisted the welding team in troubleshooting and learned some basic robot programming.

"I plan to use many of these skills in my class. It has worked out nicely to be able to see them first hand and be able to give examples to students as to why we need to develop good communication skills, and be able to use technology like ProE and Power Point."
–Brandon Brooks
Industrial Technology Teacher, Edward Stone Middle School

Ed Brown
Kemin
Des Moines, IA

During his Externship, Ed worked in the Specialty Crops Improvement Division. He had projects in all three parts of this division: greenhouse operations, preparation for outdoor planting, and lab testing and tissue sampling.

" I think quite a few people at Kemin could give us an idea about what scientists do on a daily basis which would be good for kids to hear. They also have lots of information about the variety of things scientists can do. Not everyone works in a lab with safety glasses and lab coats. The variety of jobs that scientists are employed to do is incredible and teachers, unfortunately, are not really prepared to answer questions about the types of job out there."
–Ed Brown
Science Teacher, Bondurant-Farrar High School

Peg Conlon
Monsanto
Ankeny, IA

At Monsanto, Peg worked in the Wet Chemistry lab, where lab tests are ran on a variety of seeds and soil. During her Externship she learned about each of these tests, but primarily focused on assisting with soil texture testing.

"Employers are demanding skills including working productively in teams, communicating effectively, creativity, innovation, flexibility, integrity, and desire to learn."

–Peg Conlon

Science Teacher, Dowling Catholic High School

Dan Dickes
Diamond Vogel Paints
Orange City, IA

As an extern in the Peridium Powder Coatings Research & Development Lab, Dan worked with technical experts developing powder coatings that meet the specifications of the manufacturing industries. This includes paint color, gloss, weathering, and UV protection to name just a few. He also worked in the testing lab testing the opacity, dry film thickness, gloss, and other elements of the paint.

"This summer's Externship has opened the door to collaborative possibilities in my science department. I will be teaming with other science teachers in developing project-based learning activities, such as a forensics unit involving a murder scene… My Externship has challenged me to creatively pursue such projects that enable students to collaborate in learning the science content behind the scenes that demand the learning."
–Dan Dickes
Science Teacher, Sioux Center High School

Jared Diers
John Deere Dubuque Works
Dubuque, IA

Jared worked with Deere's Crawler Module fabrication profile team to brainstorm, analyze and implement new ideas for improved efficiency within the department. Jared also worked with engineering and the wage workforce to implement several projects, including the design of a conveyor system for high volume parts, right sizing the inventory replenishment system, and a color coding system for visual inventory replenishment.

"It is amazing to see that there are people working here everyday thinking and trying to come up with new ways of making this process more efficient. This leaves me thinking. How much more efficient can this process be? If we can find ways to make an already efficient process better it will give me the thinking/ understanding that I need to make my classroom flow in a more efficient way."
-Jared Diers
Industrial Technology Teacher, Drexler Middle School

Nathan Elliott
Principal Financial
Des Moines, IA

During his Externship, Nathan was paired with six different IT and Management teams. In one of his projects, he collected data concerning duration of certain business deals and created visual models for the team to see different efficiencies and complexities. They then were able to better allocate work within their team. He was also able to present some insight into recruiting the best and brightest from generations Y and Z.

" Group collaboration is a huge part of the problem solving solution… Assigning a task to students for group work is only one small part of setting up a PBL [Project-Based Learning] lesson. Each group member must be responsible for an individual piece to self manage but then each individual role needs to fit together to complete the task. Partitioning a project into separate yet equal roles that can be individually evaluated is the key part as an educator to set up a real-world PBL environment."
–Nathan Elliott
Math Teacher, Carlisle High School

Carolyn Fischer
Mississippi River Museum & Aquarium

Dubuque, IA

Carolyn was exposed to all that is involved with the museum both in front of and behind visitor eyes. With the Living Collections staff she was able to assist with caring for the animals, from armadillos to crickets! Being a part of the Education staff allowed her to learn a great deal about turtles, tortoises and how to interpret exhibits to visitors from around the world. She and the other externs also helped create assessments and guides to enhance both the changing and established galleries.

"I plan to get the necessary information to promote volunteerism at the museum to my students this fall (students that I have in class as well as NHS). This opportunity would not only help students step out of their comfort zone, but would expose them to what it takes to be a good and respected employee."

–Carolyn Fischer

Science Teacher, Dubuque Senior High School

Karl Goldsmith
Kemin
Des Moines, IA

Karl worked with Kemin scientists to validate a method that tests for organic impurities by gas chromatography with a flame ionization detector. The primary goal of the validation was to develop a method that accurately identifies and quantifies the impurities according to product specifications. This validation allowed Kemin to test for these impurities in-house rather than sending the test to an outside laboratory.

"The most common question a student has for their teacher is "why are we learning this" and I feel they are justified in their questioning. These real world experiences provide a level of credibility when teaching students. If they know and can understand how the content they are learning is used, then they are more likely to focus and learn the material."
–Karl Goldsmith
Science Teacher, Valley High School

Ruby Golnick
Iowa DNR
Clear Lake, IA

Ruby's Externship with the Department of Natural Resources was an eventful one! One of her biggest projects involved banding 400 geese in three days. This was a strategic process that involved penning up the geese then sexing and banding them.

"Every one of these [21st Century Skills] characteristics is essential every day on the job. When we were goose banding the team aspect was essential; everyone was willing to listen to other's ideas as well as contribute innovative thoughts and then choose the most viable option… Initiative to see and do what needed doing, assessing personal ability to do each task and willingness to try different tasks made for a very successful day. "

–Ruby Golnick

Science Teacher, Mason City High School

Eric Grabe
Pella Corporation
Pella, IA

During Eric's second summer at Pella Corp. he worked as an engineer in the test lab reconfiguring the Hurricane Impact Test area. His job was to help the engineers gather and analyze data for their current air cannon that is used to launch 2x4's for the test. By the end of the project they expect to have a fully functioning cannon that can be more easily maneuvered, takes up less space, and is more easily aligned with code specifications. Eric assisted in the design, construction, programming, and calibration for this project.

"Visiting the working world really makes you realize how bizarre the testing mentality of the education world is. I do not see people taking summative tests. Ever. I see people creating new things, problems solving, collaborating, and evaluating. I do not see them put all of their resources away and working individually on a project/problem and then turn it in and wait to be 'judged'. What if, instead of testing, students had a chance to create, problem solve, collaborate, and evaluate as a part of their assessment?"
–Eric Grabe
Science Teacher, Newton High School

Annie Hoth
Boehringer-Ingelheim Vetmedica
Fort Dodge, IA

Annie worked in the Business Process Excellence (BPE) department analyzing data and identifying outliers for process improvement. Her project involved surveying the need for a basic statistical training course to be offered to employees, and also to create the course and run a pilot test.

"I would anticipate and hope to see as Real World Externships become more popular statewide, schools will have access to or be equipped with technology, devices, etc. similar to that being used by businesses. The 21st century has shifted the way the classroom looks and how businesses operate and I believe to best prepare students for success beyond high school, many more conversations between the public and private sector need to occur.

–Annie Hoth

Math Teacher, Manson Northwest Webster

Taylor Hubbard
Kemin

Des Moines, IA

Taylor worked at Kemin with bacterial strains being considered for a probiotic product for house pets. This involved conducting small-scale bacterial fermentation experiments and selecting the strain that showed the best growth. The project allowed him to learn and practice basic microbiology skills, including fermentation, plating, and aseptic techniques.

"…It is very obvious that every one of the Science and Engineering Practices listed in the Next Generation Science Standards (e.g. asking questions and defining problems, developing models, analyzing and interpreting data, constructing explanations and designing solutions, and so on) are being used. These skills are second nature to the people in this work setting. Science is the water they swim in."
–Taylor Hubbard
Science Teacher, Ankeny High School

Mary Hunt
Rosenboom Machine & Tool
Sheldon, IA

Mary worked to determine the math skills necessary to work in CNC lathing or CNC milling, and created assessments to test for proficiency. Additionally, she investigated how the gap between high school and the workforce can be closed.

"I never knew how important it is for students to be in control of their own learning until I walked onto the production floor at Rosenboom. If we all succeeded in teaching our students how important it is for them to learn on their own, every employer would be jumping up and down."
–Mary Hunt
Math and Computer Programming Teacher, Spalding Catholic School

Michael Jensen
John Deere Dubuque Works
Dubuque, IA

During his Externship Michael updated existing plant layout drawings and also designed concept drawings. The concepts are based on collaboration/ communication with Deere stake holders to show possible designs needed to determine the most efficient and cost effective final design to implement the new equipment and processes.

"I really see the a lot of the 21st Century skills. While the technical skills are important, the skills such as working together, communicating, collaborating are just as important if not more important. In today's workplace no one person can make all the decisions or know all of the information."

–Mike Jensen

Industrial Technology Teacher, Dubuque Senior High School

Olga Johnson
Monsanto

Muscatine, IA

MONSANTO imagine®

This summer Olga worked on waste water analysis at Monsanto. She tested waste water for nitrites, nitrates and phosphorus. All of this was done using specific methods that are compliant with Environmental Protection Agency.

"Students need to learn to work collaboratively with their peers, and not just with their friends. Last year I was flexible, and allowed some students to choose their groups, but this year I would like to group students by their strengths and make sure that they understand their roles in the groups. In a real world we do not choose who we want to work with, and I would like students to understand this."

–Olga Johnson

Math Teacher, East Campus School

Bob Kirchner
GKN
Armstrong, IA

GKN Armstrong Wheels

The main objective of Bob's Externship at GKN was to develop visual preventive maintenance documents to be posted at each machine in the manufacturing process. The documents will help assure longevity of the machine tools as well as simplify the required maintenance procedures. The whole process will streamline communications between all shifts of workers and their supervisors.

"After working this week I have begun to realize the importance of teaching skills that our students can take pride in organization, attention to detail and pride in keeping a neat and orderly work space."

–Bob Kirchner

Industrial Technology Teacher, Spirit Lake High School

Amanda Kite
Siemens Energy
Fort Madison, IA

SIEMENS

Amanda's summer Externship involved Lean Manufacturing, which utilizes precise methodologies to eliminate waste which in turn increases value to the customer. This creates a culture of continuous improvement that considers the customer first, and cascades back through all aspects of the value stream. It consists of preserving value and empowers employees to "work smarter, not harder".

"…..a classroom and school cannot run without generating questions, creating new investigations, and communicating. A solid inquiry based classroom should use all of the above. In order for people to understand how to work in the industry, they must be introduced to the process at an earlier age."

–Amanda Kite

Science Teacher, Van Buren High School

Ron Knapper

John Deere Product Development Center

Silvis, IL

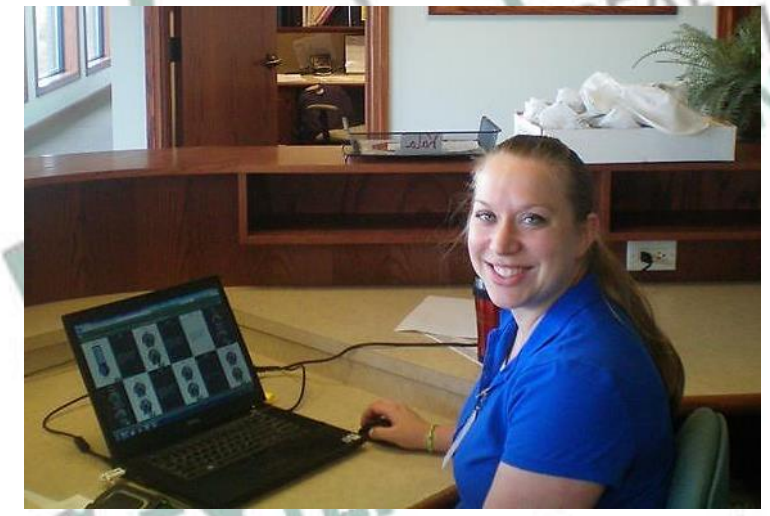
Ron worked with Deere's Machine Knowledge data team in two areas. First, he assisted verifying the validity of the machine data. Second, he worked with Deere Engineers on analysis using graphical data representation software to discover data trends and patterns which can be used to improve the equipment design, dealer value-added opportunities and end-user productivity.

"One of the laments my students bemoan when I present them with a problem / project to stretch their ability to problem solve is, "I don't know how to do that, you haven't taught that yet." Maybe you are supposed to know it already, maybe I am expecting you to figure it out. That is the real world…How do you LEARN ON YOUR OWN? Being a life-long learner does not mean being a student, but being a LEARNER. Being open to learn new things, being curious, being ready to learn."

–Ron Knapper

Math Teacher, Davenport North High School

Elizabeth Kluver
Rosenboom Machine & Tool
Spirit Lake, IA



This summer, Liz assisted in the implementation of new software that will allow all employees to access metrics in an easy to follow platform. She also worked on a project that involved a training and cross-training database and development. She worked with HR to expand their training program and to ensure it met ISO specifications and is beneficial to the staff at Rosenboom.

"I want students to realize the value in the connections they make now will help them throughout the rest of their education as well as working world. I would not be able to complete this project at Rosenboom if it wasn't for making connections and forming relationships… I really have to answer the question, how can I teach the skills necessary to build positive working relationships?"
–Liz Kluver
Technology Teacher, Spencer High School

Michelle Larson
CIVCO
Kalona, IA

Michelle reviewed several key equipment qualification protocols and developed recommendations for best practice of statistical techniques. These techniques support the development, execution and maintenance of equipment qualifications and other processes, and product testing. Michelle was also exposed to many product and production process scenarios that she can utilize to enhance the classroom experience of her students.

Whitney Leverich
State Hygienic Lab
Ankeny, IA

Whitney's main focus was in the Limnology Department where she was able to travel around Iowa collecting water samples and analyzing the species that inhabited the rivers and streams. She was also able to work with many other departments including nutrient demand, blood lead, and sample preparation.

"Not only would the students observe career options during a lab tour, but I could also use their observations to branch into both biology and earth science topics such as the differences between water sheds in southern Iowa and those in central and northern Iowa. Another plus is that students would understand the necessity of keeping a lab journal, taking notes, and keeping diligent track of their samples as they observe the importance of the nature of science as well as the content."

–Whitney Leverich

Science Teacher, Colo-Nesco High School

Kris Lien
Boehringer-Ingelheim Vetmedica
Fort Dodge, IA

Kris performed a series of validation tests within the Sterility Lab. These tests will be part of a report submitted to the United States Department of Agriculture (USDA) so the lab can be granted approval to perform these tests.

"There is not a day that goes by that I don't somehow have a new thought, create a new idea, or pick up on something that I either experience first-hand or hear others talk about that might have a chance to impact some of what I do in the class room. I'm not sure I've ever actually been excited in July for a school year to begin the following August, but this year there are definitely some things that I'm excited to try in at least a couple of my classes because of what I've learned so far."
–Kris Lien
Science Teacher, Fort Dodge High School

Erin Marshall
Indian Creek Nature Center
Cedar Rapids, IA

Erin created a model to more accurately predict the number of casual trail users at the Nature Center. Erin also performed analyses on program attendance, membership retention, and program costs. These analyses will be used to improve the programs at the Nature Center.

"[My Externship] has helped me realize how valuable cross-curricular projects can be. Aside from giving students a real-world context for what they are doing, I really believe that it gives them a better understanding of the concepts. They are having the ideas reinforced more frequently, and cross-curricular projects help insure that teachers are on the same page about what's important to know for that concept."
–Erin Marshall
Math Teacher, Central City Junior/Senior High School

Beth Martin
Des Moines Public Works
Forestry Division

Des Moines, IA

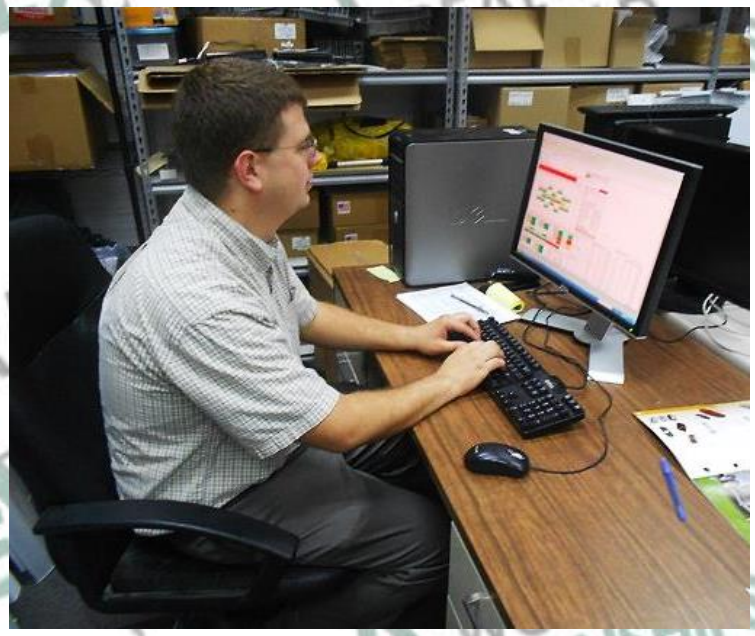
Beth and a fellow extern worked together to launch the beginning of an Urban Forest Master Plan. As an extern, Beth focused on the facts and figures of the benefits to increasing our Urban Forest in the Des Moines Metro Area.

"This kind of 'on the job' work has given me insight as to why students need to understand Scientific Inquiry and Process… I have also realized that my final product will have an audience that is not necessarily scientific field, but one that will need a scientific inquiry background knowledge to process what they will be reading in order to make educated decisions to maybe help and make a difference in our cause. So, even if a student doesn't choose a career in a scientific field, there is a need to be able to digest what someone who is in the scientific field maybe trying to identify as important or not to them."

–Beth Martin

Des Moines Public Schools

Curtis Martinek
Innovative Lighting
Roland, IA



During his summer Externship, one of Curtis' main projects was to review and update photometric testing templates for truck and trailer lighting product lines. These lights need to meet many standards based on the Federal Motor Vehicle Safety Standards and the Society of Automobile Engineers. Curtis also tested lights for these certification standards.

"I want my students to be able to explore a problem from all angles without having to give step-by-step directions. I am acting as the student during the Excel template project so hopefully I can see what the students encounter when I give them a challenging and open-ended project."
–Curtis Martinek
Math teacher, Gilbert High School

Diane May
Mississippi River Museum & Aquarium

Dubuque, IA

Diane divided her time between the educational aspects of the museum and care of the animals in the living collections. She assisted keepers in day-to-day care and also worked with the educational aspect of the museum doing guided tours and other outreach.

"I saw aspects of quality instruction in how they gave us responsibility but remained available to answer questions. I think this experience will help me to focus on which students would benefit by being pushed out of the nest sooner and which will need me to be more available."
–Diane May
Science Teacher, Beckman High School

Brad McCloskey
Johnson Co. Conservation Board
Oxford, IA

Brad completed multiple Species Surveys of certain target species of greatest concern in Iowa. His background in biology with a wildlife biology emphasis was put to good use, as he was able to use his knowledge of bird identification and mating calls, amphibian mating calls and identification and many other outdoor skills during these animal surveys.

"…Anytime we as teachers get the opportunity to coordinate our efforts to team-teach (especially a project based opportunity like we are preparing for) students will gain a better understanding of where they might use this knowledge in the workplace and hopefully gain a clearer understanding that <u>all</u> subjects are essentially tied to the 'world of work'."
–Brad McCloskey
Science Teacher, West Branch High School

Charlotte McDermott
State Hygienic Lab
Iowa City, IA

Charlotte learned about the different tests performed at the lab as well as how the tests are performed. She assisted in the labs working in the areas of environment, maternal and newborn screening and disease.

"All of the laboratory days… really supported the fact that students need to understand and follow the data collection parameters as part of the "scientific process". In addition, the machines which are used are complex and expensive- you have to know what you are doing, what each machine is used for, and what requirements you need to have/keep in order for your results to be considered accurate. This requires students to have a basic understanding of technology before coming into the job with training as needed along the way."

–Charlotte McDermott

Science Teacher, Linn-Mar High School

Sarah Michaelson
Monsanto
Muscatine, IA

MONSANTO imagine®

Sarah worked with a fellow extern testing Monsanto's waste water. She tested different methods of monitoring phosphorous, nitrates and nitrites in treated waste water. These methods must be implemented in such a way as to comply with EPA regulations.

"[Monsanto's] demos and tests fields are pretty much exactly what I'd like to be able to do with my class on a smaller scale. I really want my students to be able to design an experiment and then compare the growth of two or three sets of plants."

–Sarah Michaelson

Science Teacher, Bettendorf High School

James Mills
Electronic Engineering
Mason City, IA

James worked on various projects, including helping to install, remove, replace, and troubleshoot various types of radio equipment. Most of his work was done in the shop, outfitting brand new police cars with the latest radio, surveillance, and safety technology.

"I'm also becoming more aware of how important confidence is. My main host gives me tasks that I've never done before, and lets me do them by myself. I'm in situations where I'm not confident that I can get it done… Many of my students feel the same way, and it can be difficult to empathize with them. I think I can help, though, by modeling how I think and adapt to new situations."
–James Mills
Math Teacher, Mason City High School

Gary Morris
Blank Park Zoo
Des Moines, IA

In the mornings, Gary and his two fellow externs assisted the zookeepers with animal care duties. The second half of the day was spent on special education and outreach programs. One program involved bringing STEM experiences to zoo guests by way of signs and electronic links through QR cores.

"The one thing that this program targets the best is the "Rigorous and Relevant Curriculum." I am a big believer in the need for relevance in classroom. We have to be able to convincingly answer the question, "Why do we need to learn this?" Anything that allows us (teachers) to experience real-life situations where their education may be used is a good thing."

–Gary Morris

Science Teacher, Des Moines Meredith Middle School

Linda Moser
Lennox Industries
Marshalltown, IA

While working at Lennox Industries, Linda participated in a variety of data collection and analysis activities. The results of the studies will be used to ensure optimum quality levels. She also evaluated training procedures and offered insight and suggestions for improvement based on her background in education.

"I have seen so much math being used here. I am getting ideas every day for ways to enhance my classroom instruction. The lists of **connections to the math I teach** is already a page long! I have also come to realize that some concepts I skip because they seem difficult for my students or I didn't see the connections, are possibly the most **relevant** in a manufacturing setting whether you are a factory worker or management."
–Linda Moser
Math Teacher, South Tama High School

Adam Moss
Wells Enterprises
Le Mars, IA

Adam worked with the Research & Development Tech Services group at Wells Enterprises. As a science teacher and growing up on a dairy farm, he used this background to assist with the study of different processes to prepare ingredients for ice cream production.

"Obviously, kids need to know how to use technology. And they already do—probably better than most adults. I think the key is using it in a way to become more productive and produce documents and products that are worthy of the working world."
–Adam Moss
Technology, Math and science teacher, LeMars High School

T.J. Murphy
Wickiup Hills Outdoor Learning Center
Toddville, IA

T.J.'s major project was a prairie analysis study that consisted of identifying, quantifying, and analyzing the diversity of plant species in a reconstructed prairie. T.J. then researched and provided recommendations on ways to increase the diversity of plant species in the reconstructed prairie. His other major project was aligning Wickiup's Educational Programs to the Next Generation Science Standards (NGSS). This will help schools select programs that will relate directly to their curriculum.

"I have learned that relevance is a huge part to make learning meaningful. So I have come to the conclusion that LIVE creatures engage learners. The Live creatures at Wickiup are all native to Iowa and create an understanding for students to be respectful of nature."
–T.J. Murphy
Science Teacher, Benton High School

Aaron Nickman
Ellison Technologies
Council Bluffs, IA

Aaron assisted with developing curriculum for new classes taught at Ellison Technologies for Iowa Western Community College. Along with that, he improved three-dimensional computer models of components used for developing work cells.

"It is very obvious that from the technician side of the company, being able to apply the scientific method and using problem solving skills is very important. From the office side of the company, documentation is a very important skill. Both sides, the office and the technicians have over lap in these skills also."
–Aaron Nickman
Industrial Technology Teacher, Lewis Central High School

Karen O'Loughlin
Accumold
Ankeny, IA

This summer, Karen worked with Accumold's Human Resources and Information Technology departments. Here she used her programming skills to create an online job application that Accumold will use in the future.

"No matter what department you are in, here at Accumold, everyone knows that the company is focused on meeting the customer's needs quickly, efficiently and with a smile on their face. Accumold demands a lot of their employees but they also provide the support to help their employees be the best that they can be. I want to do that for my students."
–Karen O'Loughlin
Math and Technology Teacher, Ankeny High School

Chandra Oswalt
Blank Park Zoo
Des Moines, IA

This summer Chandra's first project was to create surveys for various departments at the zoo. She also implemented some of the surveys and analyzed the results. For her second project Chandra worked with her two fellow externs to create signage highlighting the various STEM careers and skills that take place at the zoo. The signage incorporated QR codes and linked them to activities.

"Being at the zoo, there are content skills being used all around me… The nutritionists calculate how much food each of the animals need to complete their dietary needs. This easily aligns with the Common Core Math Standards for 7th grade expressions and equations."
–Chandra Oswalt
Math Teacher, Des Moines Meredith Middle School

CeAnn Palmer
Regional Medical Center
Manchester, IA

CeAnn worked with the Marketing and Administration Departments on many projects. She researched for promotional ideas and selected the media and software based on the project or advertising outlet. She also aided in updating RMC's website and designed printed marketing materials for projects and events.

"It's our job as educators to assess employability level of our students, because after spending two hours with the Human Resources Director, seeing how the Marketing department went to more team-based critiquing, and the entire organization went to strategic planning about three years ago their success is due to the employability skills that these people have rather than the benchmarks they meet in high school and/or college."
–CeAnn Palmer
Technology Teacher, Cascade High School

Kelen Panec
Kemin Industries
Des Moines, IA

Kelen worked in the Personal Care division with various projects and validation experiments to determine if the products being produced are safe for human use. Her main project involved a validation test for the effectiveness of a cleaning agent on various “dirts”.

“… I have seen many situations where the very skills we are trying to teach our students are also needed in the workplace. The ability to work together and to share—oh yea—sharing. Didn’t we learn about that in kindergarten? When more than one business unit is sharing equipment, the need for open communication and a need for flexibility is utmost. For our students, learning to share and to communicate in a positive manner is so important for success in their futures.”
–Kelen Panec
Science Teacher, Red Oak High School

Brian Robison
Blank Park Zoo
Des Moines, IA

Some of Brian's primary duties and responsibilities included animal husbandry, diets, and veterinary care. The mornings focused on animal care/needs, and the afternoons were spent working on STEM projects with highlighted QR codes that detail STEM career possibilities and the different sciences that relate to specific animal criteria.

"My Externship is literally on-the-job training. Experience is the best teacher. Exposure to realistic career and job related skills is very inquiry based. We are given "tasks" to perform, then allowed flexibility on how we accomplish the task. There is no right or wrong way to complete the task. We then explain our rationale for the method or sequential steps taking to accomplish the task. We setup inquiry based labs/activities the same way for our students."
–Brian Robison
Science Teacher, Southeast Polk High School

Eric Rosburg
John Deere Power Systems
Waterloo, IA

Eric set up control limits for bolted structural joints and wet joints in John Deere's 13.5 and 9 liter diesel engines. He collaborated with assembly engineers along with quality engineers to analyze the monitored delivered torque on these joints. In addition, He investigated root causes for outliers that do not meet quality specifications.

"I knew already that we need to have students interpreting results, but this experience has been reaffirming of that belief…and I am guilty of making students rotely compute slope, etc without interpretation far too often."

–Eric Rosburg

Math and Technology Teacher, Cedar Falls Peet Junior High School

Richard Scearce
AirCover Integrated Solutions
Cedar Rapids, IA

AirCover™
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Richard's Externship focused on training customers how to operate and maintain Quadrotors, wrote and edited a training manual, wrote software to add functionality to a flight simulation program, and worked in the lab assembling Quadrotors.

"I have heard many employers complain about job applicants lack of communication skills, especially ones with an engineering or technical background. I am seeing first hand why this is so crucial, especially working remotely with a supervisor who is very busy. "

–Richard Scearce

Math and Science Teacher, Mount Vernon High School

Tiffany Schallau
Army Corps of Engineers
Rock Island, IL

US Army Corps of Engineers ®
Rock Island District

During Tiffany's Externship, she went into the field and helped collect data for tree inventories. This information can be extrapolated to figure out the estimated frequency of these trees per acre. It can also help foresters know what steps to take in the future to ensure the longevity and health of important species of trees in the area. She also worked on a project at the Coralville Lake, and with a biologist from the Army Corps of Engineers.

"I would like to provide students examples of how I used these [21st Century] skills this summer. When I have students design and conduct their own experiments, I can share these examples to help students understand the value of adjusting to change, demonstrating leadership, etc… Not only will I model these skills (directly and through stories), but I will require and encourage these types of skills through student-directed inquiry labs."

–Tiffany Schallau
Science Teacher, Davenport Wood Intermediate School

Dana Schrader

John Deere Technology Innovation Center

Moline, IL

During Dana's Externship, she worked with the materials and painting engineers to run simulations in the E-coat painting system. After simulations were run, they analyzed data to ensure each part had an even coat of paint and that the paint was able to reach all surfaces.

"As I progress through this Externship program, the more my mindset shifts from how I can make this meaningful in mathematics, to how can I make this experience meaningful to my students. In what ways can I translate all of the things I've worked on and observed to impact the lives of my students?"

–Dana Schrader

Math Teacher, Bettendorf Wood Intermediate School

Krystle Stehno
International Automotive Components
Iowa City, IA

For Krystle's Externship she completed a fixed assets inventory. Her job was to circulate around the plant, find an asset, identify it and collect information about these specific assets.

"It felt pretty awesome to put my math skills to good use! We came up with a couple more options, most of which were thrown out in the end, and created a PowerPoint to sum up the work we had done. We then presented it to some of the top level people in IAC and they seemed to like the option that I crunched numbers for best! It made me feel good to have helped them solve their problem."
–Krystle Stehno
Math Teacher, Williamsburg Junior-Senior High School

Stephanie Stephens
Omaha's Henry Doorly Zoo
Omaha, NE

Stephanie experienced many different aspects of the zoo. Through rotations at different areas, Stephanie was able to get hands-on experiences of what being a zoo keeper entails. Stephanie not only took care of the animals on a daily basis, but she also observed each animal on a personal level.

"I have enjoyed my time at my host business so much that I do not want to leave. Some people would be upset with the fact that they have to scoop, siphon, scrape, and scrub poop off of every surface that may be seen by the public eye. Some people may even gag at the though of taking dehydrated fecal samples and testing their nitrogen content. But, I honestly can say that I am going to be extremely sad when my time here is up."

–Stephanie Stephens

Science Teacher, Nishna Botna High School

Ashley Stokka
Accumold
Ankeny, IA

Ashley's Externship was spent with the Human Resources department to fine tune their current new employee training procedures and to create new training for their AQL Inspectors.

"I forgot what it was like to walk into something that I knew nothing about and be asked to perform a skill or produce a product. Our students must feel that same way at the beginning of each class/year. After this experience, I will have much more empathy for those 'deer in the headlights' looks."
-Ashley Stokka
Math Teacher Ankeny Prairieview Middle School

Dennis Vaughn
Des Moines Public Works
Forestry Division

Des Moines, IA

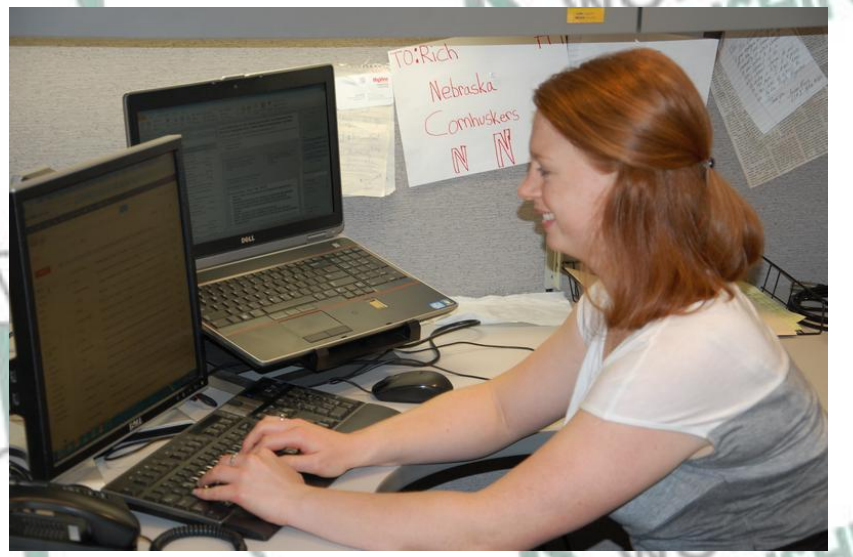
For this summer's Externship Dennis worked on research and the initial writing of an urban forest plan for the city of Des Moines. Dennis' specific area of research was on storm water management. Trees decrease the amount of storm water runoff, which in turn reduces erosion and the amount of sediment and contaminants that enter into the water way.

"We need to be mindful of this experience as we attempt to create similar situations for our students and attempt to foster their 21st century skills and increase their understanding to be more prepared for higher education and the work place of the future."

–Dennis Vaughn

Science Teacher, Baxter Middle School

Andi Werger
Hy-Vee
Des Moines, IA



Through the 2013 Externship program, Andi learned how to analyze the many products in the Hy-Vee grocery store and relate them to math she uses in her classroom.

"The fact the jobs my students will hold are not even created yet blows my mind. How am I supposed to use today's textbooks to teach tomorrow's……..well, who knows what they'll be doing. Your guess is as good as mine!"
–Andi Werger
Math Teacher, Stillwell Junior High School

Tyler Wright
John Deere Des Moines Works
Des Moines, IA

For his Externship, Tyler worked alongside design engineers to reverse engineer and optimize John Deere's new line of sprayers. Tyler was specifically assigned to identify parts and assemblies within the sprayer that could be redesigned to decrease weight and cost of the sprayer. The end goal was to apply his drafting experience to create 3D models and evaluate his solutions.

"Of everything that I will be taking back to the classroom with me out of this Externship, it has already become clear that it will not be the content that will be gaining the most benefits. I will bring back an emphasis on collaboration and teamwork; a need for a focus on interpersonal communication skills. I will bring back application of the design process and problem solving in broad contexts."

–Tyler Wright
Industrial Techology Teacher, Dallas Center Grimes High School